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# United States Department of the Interior

## GEOLOGICAL SURVEY

WATER RESOURCES DIVISION  
111 Great Valley Parkway  
Malvern, PA 19355

May 2, 1989

Ms. Gerallyn Valls  
Pa. CERCLA Remedial Enforcement Section  
U.S. EPA, Region III  
841 Chestnut Building (3HW12)  
Philadelphia, PA 19107

Dear Ms. Valls:

The U.S. Geological Survey (USGS) ran geophysical logs of the Hatboro 2 well (USGS Mg-212) on March 30, 1989, and the Penn Fastener 1 well (USGS Mg-1114) on April 4, 1989, in accordance with the work plan for geophysical logging at the Raymark NPL site.

Correlation of logs between the two wells is difficult, but the gamma logs indicate that land surface at the Penn Fastener well is equivalent to 17 feet below land surface at the Hatboro 2 well. The electric logs at Hatboro 2 indicate that this well penetrated the contact between the middle and lower members of the Stockton Formation at about 150 feet below land surface.

The driller reported that yielding zones were penetrated at 82, 131, and 146 feet. The fluid resistivity and caliper logs indicate that some water is entering the well at 71 feet and possibly at 50 and 55 feet as well. These zones were above the water table when the well was drilled in 1981. A yielding zone at 80 feet can be seen on the fluid resistivity, temperature, and caliper logs. A large caved zone can be seen on the caliper log at 132 to 134 feet, but a yielding zone cannot be seen on the fluid resistivity or temperature logs. The caliper, fluid resistivity, and temperature logs all show a water-bearing zone at 143 feet. The lower three yielding zones in this well all agree well with the three zones reported by the driller. Under static conditions, the two lower zones are thieving, which explains why the zone at 132 to 134 feet cannot be seen on the temperature and fluid resistivity logs. The brine trace log of the Penn Fastener well indicates a downward flow of 0.5 gallons per minute at 70 feet, a downward flow of 5.7 gallons per minute at 100 feet, and a downward flow of 0.5 gallons per minute at 140 feet.

Water-bearing zones are difficult to identify on the logs for the Hatboro 2 well. Both the temperature and fluid resistivity logs indicate the possible presence of a zone at 63 feet. The temperature log indicates that zones may also be present at 130 to 135 feet, 140 to 150 feet, 160 to 170 feet, and 203 feet. After the 17-foot difference in stratigraphic level is taken into account, the 140- to 150-foot and 160- to 170-foot zones in Hatboro are probably the same two zones penetrated in the Penn Fastener well at 132 to 134 feet and at 143 feet.

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The graphic temperature log we gave you for the Hatboro 2 well is incorrect above 203 feet. We will generate a new log from the digital data and send it to you within the next few days.

No vertical flow was detected by the brine trace log in the Hatboro 2 well. The presence of three large-diameter (9- to 14-inch) wells within a distance of 30 feet probably provides so much cross-sectional area that flow rates are too low to be detected.

Packer testing was conducted by the USGS in the Penn Fastener well on April 19 and 20, 1989, in accordance with the work plan for packer testing at the Raymark NPL site. Three zones were tested and sampled by EPA's contractor.

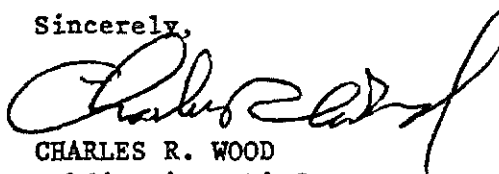
For the first test (on April 19, 1989) the lower packer was inflated at 75 feet and the top packer was not used, so that all water-bearing zones above 75 feet were sampled. The static water level was 44.74 feet below land surface datum (LSD) at 1:35 p.m. The packer was inflated at about 2:00 p.m. and the water level above the packer rose nearly 4 feet in 32 minutes. The well was pumped for a little more than 30 minutes at varying rates that averaged about 2 gallons per minute, approximately the maximum yield of the upper water-bearing zones.

At 5:28 p.m. on April 20, 1989, the top packer was inflated at 76 feet and the bottom packer was inflated at 95 feet in order to pump the zone at 80 feet. Pumping started at 5:34 p.m. and ceased at 6:16 p.m. The average pumping rate was 10 gallons per minute, approximately the maximum yield of the 80-foot water-bearing zone. Water-level changes above the top packer indicated some vertical movement from zones above the 80-foot zone to the 80-foot zone.

The packer string was lowered in the well and the top packer was inflated at 125 feet to test all the zones below this depth. The bottom packer was not used. The packer was inflated at 6:54 p.m. and pumping started at 7:11 p.m. at 58 gallons per minute. The pump shut off at 7:33 p.m., apparently because of too little water, and was restarted at 7:39 at 50 gallons per minute. Pumping continued at that rate until the samples were collected and pumping ceased at 9:19 p.m. Water pumped from the lower zones probably came mostly from water that flowed down the Penn Fastener borehole after it was drilled in 1981 from zones at and above 80 feet.

We will furnish you with data on heads and discharges for each test as soon as the data are reduced. If we can be of further help, please let me know.

Sincerely,



CHARLES R. WOOD  
Subdistrict Chief

CRW:aln

cc M. Towle  
B. Guy  
K. Sniapush

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